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Structural ecosystem change in Holocene chironomid assemblages

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There is a growing trend in using structural analyses to investigate temporal changes in ecosystem system architecture. System architecture defines the organisation of taxa within a system and how this may affect system response to stress. Over the Holocene, in areas with little/no human impact, the climate has been a key driver of ecosystem change, including post-glacial to early/mid-Holocene warming, subsequent neoglacial cooling, and rapid climate change events such as the 8.2 kyr event. This study aims to investigate whether Holocene climate change is a driver for structural change in temperature-sensitive organisms, such as chironomids, in high latitude lakes. These areas are at risk from rapidly rising global temperatures, with warmer temperatures already recorded and predicted to continue rising in high latitude areas. Increased temperatures can create stress on ecologically sensitive environments where many organisms are adapted to cooler temperatures. Three sets of analyses - beta diversity, compositional disorder, and network skewness - are applied to Norwegian chironomid sequences to investigate ecosystem structural change during the Holocene.